

Amendments to the Claims

This listing of claims will replace all versions, and listings of claims in the application:

Listing of the Claims

Claims 1 to 10 (canceled).

Claim 11 (previously presented): A method for producing a zirconium alloy semi-finished product containing by weight at least 97% zirconium, intended for the production of at least one elongated product, comprising:

 casting the zirconium alloy to produce an ingot with a diameter between 400 mm and 700 mm and a length between 2 m and 3 m;

 two-stage forging the ingot to produce the semi-finished product intended to be formed to obtain the elongated product, wherein a first forging stage of the ingot is performed at a temperature at which the zirconium alloy is in a state comprising the crystalline α and β phases of the zirconium alloy, wherein a second forging stage follows the first forging stage; and

 extruding or hot rolling the forged ingot.

Claim 12 (previously presented): The method according to claim 11, wherein at the temperature of the first forging stage, the ingot contains a volume proportion of zirconium alloy in the α phase between 10% and 90%, a remainder of the zirconium-alloy of the ingot being in the β phase.

Claim 13 (previously presented): The method according to claim 11, wherein the first forging stage is performed at a temperature between 850°C and 950°C.

Claim 14 (previously presented): The method according to claim 13, wherein the first forging stage is performed at a temperature of approximately 900°C.

Claim 15 (previously presented): The method according to claim 11, wherein the first forging stage is performed at a temperature between 600°C and 950°C.

Claim 16 (previously presented): The method according to claim 11, further comprising:
performing the second forging stage at a temperature at which the zirconium alloy of an intermediate product obtained by the first forging stage of the ingot is in the α phase.

Claim 17 (previously presented): The method as claimed in 11, wherein a second forging stage is performed at a temperature at which the zirconium alloy of an intermediate product obtained at an end of the first forging stage of the ingot is in a state comprising crystalline α and β phases of zirconium alloy.

Claim 18 (previously presented): The method according to claim 11, wherein the zirconium alloy contains at least 3 % by weight in total of additive elements comprising at least one of tin, iron, chromium, nickel, oxygen, niobium, vanadium and silicon, a remainder of the alloy being constituted by zirconium with an exception of the inevitable impurities.

Claim 19 (previously presented): The method according to claim 11 further comprising:
producing a semi-finished product intended for the production of a tubular product for manufacture of a fuel assembly element for one of a fuel assembly for a water-cooled nuclear reactor and a fuel assembly element for a CANDU reactor.

Claim 20 (previously presented): The method according to claim 11 further comprising:
producing a bar intended for production of a small diameter plug bar for manufacture of plugs closing ends of jacket tubes of fuel assembly rods for nuclear reactors.